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ABSTRACT

Based on the final two years' developmental effort of the Colorado Individualized Instruction Consortium Project (CIICP), a series of recommendations are made dealing with future curriculum development. Three main goals of CIICP are delineated: develop Learning Activity Packets (LAP), design multimedia for each LAP training instructor to use in individualized instruction, and design a performance based flexible curriculum to be used as a master plan by the Colorado State Board. Four questions about individualized instruction also are discussed: Will individualized instruction work? What will be the cost of a statewide system? How much time would be required for development? What would be the best way to implement such a system? The original goals of the project also are defined. Two background papers on the LAP system are appended. (SK)

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# Individualized Instruction: Final Report and Recommendations of the Colorado Individualized Instruction Consortium Project 1973-1975.

by

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Director

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## Introduction

The value of a final report is not in a recapulation of past events, but rather in an evaluation of the goals, achievements, and lessons learned. The recommendations listed in the summary of this report reflect a careful analysis of the last two year's developmental effort of the Colorado Individualized Instruction Consortium Project (CIICP). It would behoove those persons who have policy making positions to carefully review these recommendations. The premature termination of the CIICP makes it important to learn both from the successes as well as the failures. It would indeed be a tragedy to repeat the mistakes and ignore the success of this project on any of the state's future curriculum development projects.

## Review

The original Consortium Project proposal had four main goals:

1. Develop Learning Activity Packets (LAPs)
2. Design appropriate multi-media for each LAP
3. Train instructors in the concept and development of individualized instruction
4. Design performance-based curriculum, open entry, continuous progress, open exit, multi-media individualized instruction that can be used as a proto-type master by the State Board.

Unquestionably, the CIICP has met the four main goals of the project. LAPs have been developed, multi-media of exceptional quality has been developed, instructors have been trained in both the concept and develop-

ment of the system, and the schools are using all of these resources successfully. While no proto-type masters have been made available to the state at this time, the evaluative results of the materials indicate they will represent extremely high quality.

Other questions asked by various state board personnel are, I believe, even more important in that they are the basic questions:

1. Will individualized instruction work?
2. What will be the cost of implementing an individualized instruction system throughout the state?
3. How much time would be required to develop such a system?
4. What would be the best way to implement such a system, if it was found to be beneficial to the state's long-term goals?

Does it work?

We now know that individualized instruction does work. Certainly the enthusiasm shown by the three schools to continue the project, with or without the Consortium Project, is a reflection of just how successful the system is. Statements by all three directors would indicate that even without state funding, they plan to continue with the individualized instruction system. This is a strong comment on the total commitment to the system.

Cost of Individualized Instruction

There has been a concern over the cost of implementing individualized instruction. At no time have I tried to mollify the cost factor. Individualized instruction is expensive, and will require a total commitment from the state if it intends to implement individualized instruction into the

state system.

There are ways to lessen this high cost factor and still retain a viable individualized instruction system design. Of course this would require a variety of well-designed long and short-range goals. The provisions for this sort of commitment are not easy, but only by creating instructional materials that provide an alternative education process can we possibly hope to dispell the observation of Husen that "pupils undertake learning to avoid unpleasantness".

Time Requirement for Individualized Instruction

Depending on the state commitment, the time frame needed to implement individualized instruction in the state of Colorado will range from 10-15 years. In my January 1974 report, I indicated a 3-5 year time frame for each program area to switch from a conventional teaching mode to individualized instruction.

Perhaps the most elusive concept for both the directors of the schools and the state officials has been the realization that LAP production does not occur over-night. My continual reinforcement of the 40-80 hours per LAP has, in many cases, been met with scorn and disapproval, subsequently followed with demands for increased production. A review of the LAP Development Forms and an in-depth talk with the instructors who are developing these programs proves, without question, that the time frame I have presented is both accurate and a key area of consideration for future curriculum projects.

The Best Way to Implement

The present controversary seems to be revolving around what is the best way to implement this system. Various states have attempted various forms of development or structure, some successfully, some unsuccessfully. The CIICP approach, which utilized three schools, was certainly successful for the specific schools, but of questionable success for the state.

Why was this so? Ideally, this project should have been set up with a structure that allowed it to control the many variables facing it, including realistic LAP development time frame and adequately delineated goals.

Unfortunately, the CIICP did not have authority over the LAP development effort, but rather was utilized only on a consultative basis. In effect, the responsibility was ours, but not the authority to accomplish the responsibility. Even so, the three schools tried diligently to support the recommendations of the CIICP, and I believe the accomplishments have been impressive, as the products developed are of high quality.

Yet, the accomplishments have not really benefited the state. In some people's mind, they doubt if the material will ever be turned over to the state. I believe the reason for the dilemma with this material rests again with the consultative nature of the CIICP. In effect, an endemic LAP-system development group was formed at each school, in actuality, responsible only to that school.

There are a variety of options available that could resolve the

"school benefited only" aspect. My personal belief is that a production team development effort would be the most successful for Colorado. An example of the staff of such a team is:

1. Project Director
2. Instructional Designer
3. Curriculum Specialist
4. Photographer
5. Graphic Designer
6. Artist
7. Editor/Readability Analyst
8. Darkroom Technician
9. Printer
10. Educational Psychologist
11. 3 to 7 Subject Matter Specialists

This production team approach would allow the development of precisely defined LAP-development goals, proper evaluation, and total state control.

Summary and Recommendations

The Consortium Project was a success; it's success, however, was limited by the restrictions placed on it by the original proposal. What has occurred from the CIICP's effort cannot be measured in terms of the number of LAPs, but rather in the knowledge that we now have for any future curriculum development projects.

The following recommendations, in some cases, do not indicate the solution, but rather certain things which should be avoided. Only the State Board policy makers should resolve the final decisions regarding the specific way of resolving these recommendations.

(1) No future curriculum development projects of this size and scope should be funded for less than three years. To fund a project for less

only creates undue stress on the participants of that particular project.

(2) Future curriculum projects should strongly consider a production team approach. The success of the Consortium Project schools does not, at the present time, relate to state success. Properly prepared material, utilizing the system designed by the CIICP, would be used by instructors throughout the state, even if they have not written this material.

(3) Future curriculum directors must have both the responsibility and the authority to carry out recommendations.

(4) There is a desperate need in the state for a clearinghouse to supply all the schools in the state with curriculum material. I believe that a thorough assessment should be made of all state agencies to determine if the state does not already have an agency that can handle this sort of operation, without going to the expense of setting up a brand new organization.

(5) Development efforts in the area of individualized instruction require the services of an instructional designer. While various curriculum specialists have indicated an ability to understand the function as instructional designer, they in fact do not have the experience necessary to properly implement this very complex and intricate system. The system designed by the CIICP is a complex and intricate individualized instruction system. I believe this sytem was presented to the three schools in such a way as to minimize the inherant complexities. It is easy to understand that some curriculum people believe that they can handle this type of system, but the literature is also quite clear in indicating that they cannot.

(6) Both formative and accumulative evaluations must be performed on all material produced in a curriculum project. The procedure for evaluating these materials must be included in all future proposals.

(7) LAP materials for any future projects must have a time line, including the exact number of LAP modules expected to be produced.

(8) While the CIICP was able to gain limited success utilizing intructors to write the LAP materials, there are many problems associated with using instructors as technical writers. Not only was there a problem of available time for the instructors to write, but there was a problem of fatigue, with some of the instructors being totally involved in too many school-related activities.

(9) As these instructors undertook these new writing obligations, they were not offered the same assistance and background that the schools had given them with their classroom responsibilities. Whether the writers are instructors or the preferential subject matter specialists, they need constant input from the Editor/Readability Analyst for writing support and the Curriculum Designer for organizational consistency. The use of these specialists to assist the writer's is the singlemost deterrent to repetition and re-working the materials.

(10) All future projects should incorporate a statement to the effect that all material produced under that project belongs totally to the state of Colorado. Copyrighted material will carry only the state's copyright symbol.

(11) The original proposal indicated that 99% of the total curriculum design would be completed for 15 occupational program areas in one year. All persons involved in the writing of this proposal now agree that that was an unrealistic requirement.

In final assessment of the Colorado Individualized Instruction Consortium Project, there is an interpretive error to be avoided; no one learns from the results of unrealistic requirements. The validity of any set of results depends on the initial criteria established as goals.

Future efforts should learn from the Consortium Project odyssey, the results will only be as realistic as the goals toward which that effort strives.

CIICP

# CIICP PROPOSED GUIDELINES FOR LAP DISSEMINATION

by

Jeff R. Spalsbury

March 1975

The LAP development effort by the three Colorado Individualized Instruction Consortium Project (CIICP) schools is rapidly increasing. This increased development effort requires the need for some basic recommendations regarding the dissemination process. There are four areas of concern:

I. When are the LAPs ready to be duplicated

II. Duplication of original LAP material at each of the CIICP schools

III. Storage of duplicate-original LAP material at some centralized clearinghouse agency

IV. Dissemination of LAP material to other Colorado schools

## I. When are the LAPs Ready to be Duplicated

At the present time there is a great deal of misunderstanding over when the LAP material should be made available. Two criteria that the CIICP have constantly stressed is: (1) Any LAP not completely through the developmental process should not be released. (This includes the readability and editorial evaluation as well as classroom validation.) (2) Single complete LAPs should not be released. A single LAP is worthless by itself as a classroom tool. Used by itself it would only misuse the total system design. The process designed by the CIICP staff is a LAP system and, as such, should only be released as a total component. The smallest LAP system would be a course. An example of this would be Auto Mechanics:

Department: Auto Mechanics
Course: AM 100 Basic Mechanics

The course AM 100 comprises such subject areas as (A) Personal Safety, (B) Equipment Safety, (C) Basic Hand Tools, (D) Special Tools & Equipment,

(E) Hardware, (F) Leadership, and (G) Reference Materials.

The effectiveness of the LAP system requires that the LAPs for AM 100 be released only when all LAPs, from A through G, have gone completely through the LAP development process.

II. Duplication of Original Material

In May 1974, the State Board for Community Colleges and Occupational Education (SBCCOE), agreed to pay for the duplication of all original LAP material. This duplication could occur in three ways:

(1) The CIICP school's IMC staff would duplicate the material and send it to the SBCCOE. The SBCCOE would then reimburse that CIICP school for all labor and supplies.

(2) The CIICP schools would forward the original material to the SBCCOE. The SBCCOE would duplicate the original LAP material and return the originals to the CIICP school.

(3) The SBCCOE would hire a person to go to each of the CIICP schools' IMC and duplicate the material on-site. The SBCCOE would reimburse each school for all supply costs.

The problem with the first option is that none of the three CIICP schools have adequate support staff or funds to handle a duplication effort of this size.

There are two problems with the second option. The first problem involves original material currently being tested in the classroom. Removal of this material would stop the evaluation process. The second problem involves the high risk of loss or damage to material

sent out of the school system. The schools cannot afford to make duplicate-originals as explained in Option 1. Any destruction to the original material could easily result in months of replacement effort.

The third option would cause the least amount of disruption to the three schools' LAP development effort. Each school has adequate duplication hardware. The local school's IMC director could supervise the total duplication effort. This would greatly reduce the possibility of damage to the original LAP material.

III. LAP Storage and IV. State Dissemination

The CIICP's official commitment does not include the storage or state dissemination of the LAP material. Nevertheless, the director of the CIICP has extensive experience with a national systems publisher and, hopefully, the following observations and suggestions will prove helpful to the SBCCOE.

An adequately designed clearinghouse requires a smoothly run storage and dissemination system. Figure 1, a generalized flow chart, shows duplicate-originals (dup-orig) being produced at a CIICP school, stored at a clearinghouse, and duplicates being sent to another school system in the state.

The staff requirements of such a system ranges from 7-8 people, depending on the location of the duplication facilities. If outside duplication facilities are used, delays and lost material frequently occur. In-house facilities are extremely costly.

The space requirements for even 1000 LAPs is extensive. Storing the printed portion of the LAP with the AV portion, a facility can store only 30 LAPs in a space one foot square, ten feet high. Separating the printed material from the audiovisual portion reduces the space problem but increases

the possibility of losing or misfiling material.

A clearinghouse system could help all the schools in the state by making them aware of all the various materials available for them to use and giving them a single location to obtain them. If, however, not adequately designed and operated, the clearinghouse concept is a waste of money and time.

For this reason, I do not recommend that the State Board for Community Colleges and Occupational Education set up a new clearinghouse operation until a thorough search of all state agencies, including the Board of Cooperative Services (BOCS) operation, indicates there is no other way to go. The SBCCOE can save much time and money by using an agency that already has the expertise of this type of operation.

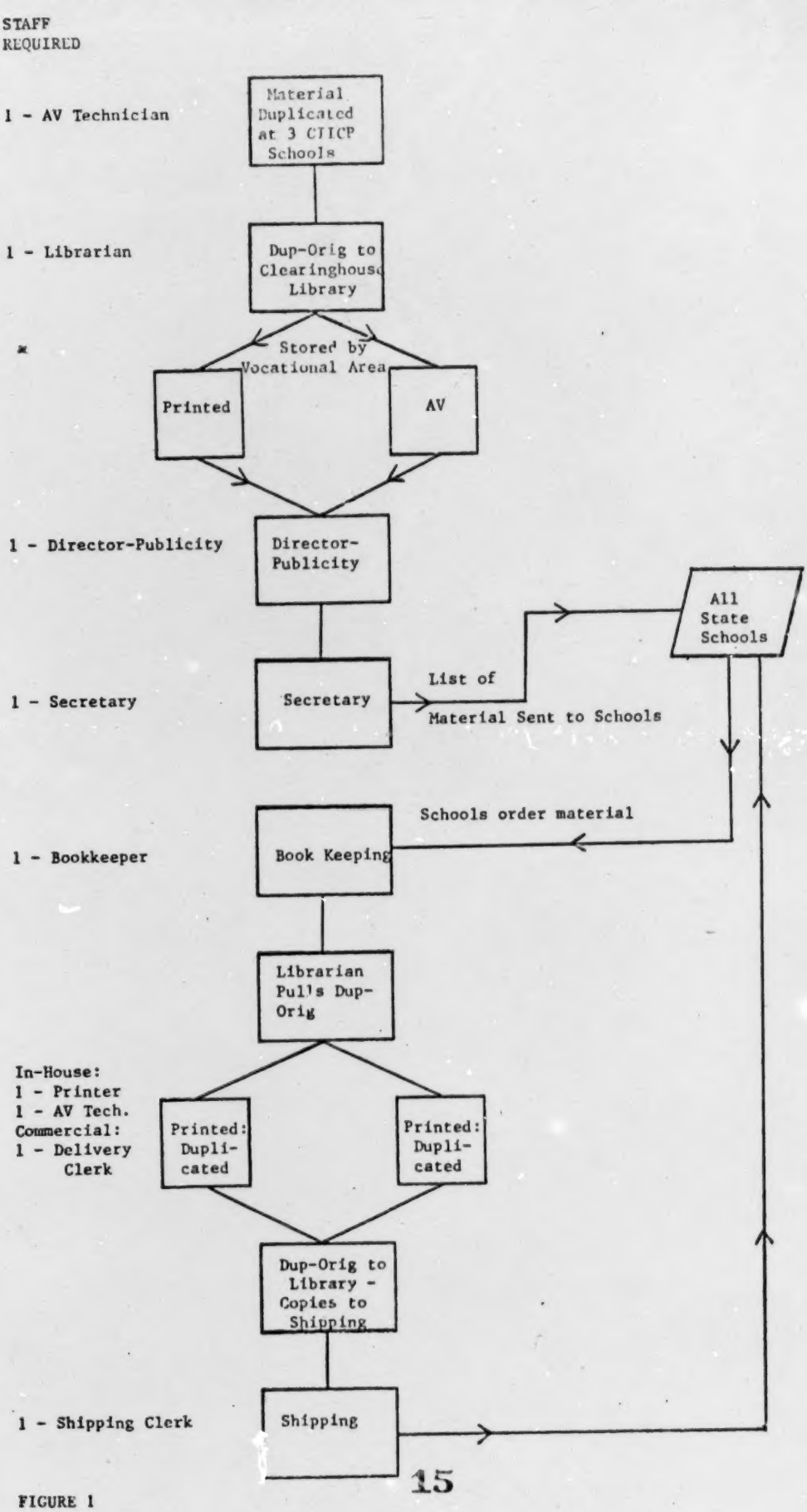
STAFF REQUIRED
1 - AV Technician
Material Duplicated at 3 CTICP Schools
1 - Librarian
Dup-Orig to Clearinghouse Library
Stored by Vocational Area
Printed
AV
1 - Director-Publicity
Director-Publicity
All State Schools
1 - Secretary
Secretary
List of Material Sent to Schools
Schools order material
1 - Bookkeeper
Book Keeping
Librarian Pulls Dup-Orig
In-House:
1 - Printer
1 - AV Tech.
Commercial:
1 - Delivery Clerk
Printed: Duplicated
Printed: Duplicated
Dup-Orig to Library - Copies to Shipping
1 - Shipping Clerk
Shipping

FIGURE 1

CIICP

# An Information Brochure On The Individualized Instruction LAP System Being Developed In Colorado

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Colorado Individualized Instruction

Consortium Project

February 1975

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13300 West Ellsworth Avenue
Golden, Colorado 80401

E. James Harris, Principal

B. Larimer County Voc-Tech Center (LCVTC)
4616 South Shields
Fort Collins, Colorado 80522

Jack Stoddard, Director

C. Community College of Denver-Red Rocks Campus (CCD-RRC)
12600 West Sixth Avenue
Golden, Colorado 80401

Donald Lindahl, Dean of Occupational Studies

## What is the Colorado Individualized Instruction Consortium Project?

The Consortium Project started in May 1973 as a pilot project to develop measurable objective, individualized instruction modules. The Colorado State Board for Community Colleges and Occupational Education funds the project on a year-to-year basis.

The three main goals of the Consortium Project are:

(1) Design performance-based curriculum to include open entry, open exit, continuous progress, multi-media, individualized instruction that can be used as a proto-type master by the State Board for Community Colleges and Occupational Education.

(2) Train instructors at the three Consortium Project schools in the concept and development of individualized instruction to help meet the main objectives of the project.

(3) To provide professional assistance to the staff or employees at each Consortium Project school who are involved in the development of individualized, performance-based, curriculum.

## Why Individualized Instruction?

Individualized instruction: " . . . a learning system that allows for individualized pacing of students through a series of systematically developed individualized program modules. It uses measurable objectives in a non-graded, open entry-exit curricula." (1) *

Many instructional designers believe that individualized instruction produces a series of benefits to both the student and the instructor. The following list reflects some over-simplification and duplication, yet they accurately represent current research findings.

* Numbers in parenthesis refer to references at end of brochure.

Student Benefits

1. Increases student achievement (2)
2. More effective in developing vocational maturity (4)
3. Increases general self-esteem (4)
4. Makes course content more specific (3)
5. Reduces the variables of teacher personality (3)
6. Allows the students to develop at their own pace (7)
7. Creates enthusiasm (7)
8. Increases training skills (7)
9. Increases teacher enthusiasm (7)
10. Reduces peer pressure (7)
11. Provides option vehicles for instruction and evaluation (7)

Teacher Benefits

1. Fewer course incompletions or withdrawals (5)
2. A drop in absenteeism and disciplinary problems (6)
3. Increases student motivation (7)
4. Frees teacher from onerous tasks (3)
5. Makes possible more individual attention to students (7)
6. Facilitates measurable results (7)
7. Allows for open entry-exit curriculum (7)

## What is a LAP?

The Individualized Instruction LAP system uses a Learning Activity Packet (LAP) format. The Colorado Individualized Instruction Consortium Project developed the LAP system to implement the highly effective, "SEE, HEAR, and DO" teaching technique.

SEE: The student reads and views a certain selection of material.

HEAR: The student hears and views an audio-visual presentation about the material.

DO: The student demonstrates some overt response involving the material under study.

Omitting any one of these three integral steps greatly decreases the teaching effectiveness of the LAP system.

## The Written LAP

The written portion of the LAP gives the student a six-step explanation of the LAP sequences.

I. Purpose - Explains to the student what this LAP is about.

II. Rationale - Explains and illustrates the importance of this particular LAP to the students knowledge or skill.

III. Objective - Explains to the student what will be expected of him at the end of the lesson: measurable and performance-based objectives.

IV. Learning Activities - Lists, in order, the procedures for the student to follow throughout the LAP.

V. Media - Lists all reference materials. This gives the student the information necessary for future references and self-arrived research.

VI. Evaluation - Explains the ultimate performance and knowledge expected at the LAP's end.

Each LAP incorporates a Pre- and Post - Evaluation. The Pre-Evaluation determines the student's prior knowledge. The Post-Evaluation determines the student-fulfillment of the measurable LAP objectives.

Each LAP may include Job Sheets, Information Sheets, or Learning Activity sheets. Some LAPs also utilize a self-evaluation. As is the case with all job sheets, reviews, or assignment sheets, these allow a student to appraise his performance. These sheets include carrel-oriented activities or shop activities. They provide Learning Activities that reinforce the skills offered in the LAP.

The audiovisual portion of the LAP may employ eight different types of audiovisual presentation modes. These include:

Sound-On-Slide

Sound Page

Filmstrip - cassette

Slide - cassette

Cassette

Super 8mm

TV

CAI

The Colorado Individualized Instruction Consortium Project adopted the 3M Sound-On-Slide projector for all prototype-production field testing. Much of the material is switched to the Bell & Howell 757 filmstrip-cassette mode after class validation is completed.

The 3M Sound Page offers an economical method of presenting detailed illustrations with explanatory narration.

Only a few of the programs incorporated the slide-cassette, cassette,

and Super 8mm into their program material. The high expense of CAI or TV presently prohibit their extensive use.

## Program Area Learning Centers (PALC)

One failure of past efforts in innovative curriculum involved the separation of educational materials from the classroom or instructional area. The Program Area Learning Center (PALC), located in each instructional area, acts as "satellite libraries." PALCs contain all the reference material, films, models, audiovisual hardware, magazines, etc. needed to support the LAP system.

Effective individualized instruction does not occur with the student in the library and the teacher in the classroom. Media and written instruction must take place where the demonstration of performance of the measurable objectives takes place.

## What will a LAP Module System Cost?

The cost of implementing a LAP system in a school involves four major areas: Courseware, Hardware, Instructor Cost, and Facility Modification.

I. Courseware Cost
   - A. Commercial Media
   - B. CIICP School Produced Media
     1. Printed LAP
     2. Sound-On-Slide
     3. Sound Page
     4. Filmstrip-Cassette

II. Hardware Cost
   - A. Production Equipment
   - B. PALC Equipment

III. Instructor Cost
   - A. Inservice
   - B. Release time

IV. Facility Modification
   - A. Setting up a PALC
   - B. Modification of the IMC

Furthermore, the success of implementing the individualized instruction LAP module system requires the total cooperation of the school's administrative staff and all participating instructors.

The "Colorado Individualized Instruction Consortium Project (Name of Program) Program Cost" lists all the components needed to set up the total program. Each individual program will have its own separate program cost sheet. These lists are not included in this brochure.

## I. Courseware

### A. Commercial Media

A very thorough search was undertaken of all commercial media available. Less than 10% of all material reviewed has passed the stringent Consortium Project requirements. Because of the current copyright situation, no copies of commercial material are available from either the individual schools or the state. The "Colorado Individualized Instructon Consortium Project (Name of Program) Program Cost" lists separately, for each program, the name and adress of the companies, the products, and their recommended purchase cost. Since these products are required in conjunction with the written LAP sequences, there should be no substitution of materials attempted unless a complete rewrite of the written LAP is undertaken.

No commercially copyrighted material is used in the written portion of the LAP. Rather, the student is referred to the outside source that contains the information needed.

Example: 1. Read pp. 12-36 of Billet and Alley, Automotive Suspension.

2. View the AV presentation.

B. CIICP School Produced Media

1. Printed LAPs

A master copy of each printed LAP will be furnished. The purchasing school will be responsible for duplication or printing of classroom copies.

2. Sound-On-Slide

A master copy of the 35mm slide will be furnished. A written copy of the Sound-On-Slide script will be furnished. The purchasing school will have to provide the trays and frames from the 3M Company. The purchasing school will have to record the narration.

3. Sound Page

A master copy of the graphics will be furnished. A written copy of the Sound Page script will be furnished. The purchasing school will obtain the Sound Pages. The school will record the narration.

4. Filmstrip-Cassette

A master copy of the filmstrip will be furnished. A duplicate of the cassette with 1000 Hz pulse will be furnished.

II. Hardware

A. Production Equipment

A minimum amount of production equipment is needed for original recording, revisions, and modification.

| | | |
|---|---|---|
| 1. | Sound-On-Slide (record model) | $800 |
| 2. | Sound Page (record model) | $330 |
| 3. | Hitachi 1000 Cassette unit | $200 |

A more complete report on the needs of the IMC is available in Spalsbury's report, "Equipment and Personnel Needs For An Instructional Materials Center Development Individualized Instruction." (8)

B. Program Area Learning Center Equipment (PALC)

The PALC contains everything necessary to support the LAP module system. This may include:

1. Reference Material (books, magazines, etc.)
2. Carrels
3. Models
4. AV Hardware
5. Courseware

III. Instructor Cost

A. Inservice

Individualized instruction, like any tool, requires some directions in order to be implemented correctly. We recommend a week-long inservice. This would allow the Consortium Project staff adequate time to explain the system of development, implementation, and verification. It would also give the instructor time to become familiar with the audiovisual equipment needed with the individualized instruction system.

Each new instructor will spend at least two days with the designing instructor who developed the LAPs. This would allow actual class-situation instruction.

Cost: Transportation
Motel
Meals
Substitute Teacher

B. Release Time

An instructor involved in individualized instruction needs

a minimum of four hours release time a week for LAP production, revision, and modification. Eight hours per week is preferred.

IV. Facility Modification

A. Setting up a PALC

Set up the PALC as close to the program area as possible. Locate all books, reference material and courseware so it is easily located by the student.

Not only must the student have easy access to the Program Area Learning Center, but all carrels, hardware, desk and chairs must be immediately available.

B. Modification of the IMC

Both the library and audiovisual department of the IMC would have to modify their current central location attitude to the satellite concept.

A more complete study on this new concept is available in Spalsbury's report, "The Impact of Individualized Instruction on the IMC." (9)

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